The WORK *of the* SOIL CONSERVATION SERVICE

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE 1940

Basic Laws Under Which the Soil Conservation Service Operates

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1. *Soil Conservation Service Act of 1935* setting up the Service and providing for a Nation-wide program of erosion control.

2. *Omnibus Flood Control Act of 1936* authorizing watershed investigations and land treatment for more effective control of floods.

3. *Title III of Farm Tenant Act of 1937* dealing with purchase and development of submarginal lands.

4. *Water Facilities Act of 1937* authorizing development of small water facilities in arid and semiarid areas.

5. *Cooperative Farm Forestry Act of 1937* providing for a State-Federal program of farm forestry demonstrations.

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THE WORK OF THE SOIL CONSERVATION SERVICE[1]

One Billion Eroding Acres

For many years now, the life has been going out of the land in this country. Rain and wind have been washing and blowing off our rich farm soils, making us in truth a poorer nation of people. Already the forces of weather have swept practically all crop-growing vitality from nearly 14 percent of our continental surface; they are steadily cutting into more than a billion acres—more than half of all the land we have.

During the 1930's, this danger at our feet—soil erosion—came into sharper focus than ever before. Record-breaking floods and widespread dust storms dramatized its power; economic depression deepened and intensified its effects on our people. On all sides, it became abundantly clear that conservation of our soils is a national necessity of the very highest order.

Specialists in Soil Defense

During this same decade, a Nation-wide program of soil-erosion control was launched for the first time in United States history and pushed forward along several fronts. Government technicians and Civilian Conservation Corps enrollees went into erosion-problem areas and helped farmers lay down defenses against rain and wind. Benefit payments were made available to all land operators who adopted specified soil-saving practices. State laws were passed giving farmers the power to form local cooperatives for soil and water conservation.

In this many-sided movement, the Soil Conservation Service has played and is playing a major role. Through a program of research and farm-land demonstrations, the Service has developed and improved practical measures of erosion control; at present it is helping farmers and farmer groups to apply these measures and solve other related land problems over the widest possible area. The Service is not a lending agency, and it makes no cash grants or benefit payments of any kind.

[1] Prepared by M. M. Tozier, Division of Information, Soil Conservation Service.

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FIGURE 1.—The Soil Conservation Service works with farmers out on the ground.

Essentially, it is a corps of trained technical men organized to work with the farmer out on the ground (fig. 1).

Blueprints for Land Security

If there were some simple remedy for the ills of the land that could be applied broadside, the job of the Soil Conservation Service would be comparatively easy. But there is just as much variety in erosion as in the landscape of the United States, possibly even more. Control methods that work wonders in the gully-torn cotton country of the Old South often do more harm than good on the dusty wheatlands of the Great Plains, and vice versa. Even on neighboring farms, land troubles are almost never completely identical.

For this reason, the core of the whole Soil Conservation Service program is, and always has been, a flexible approach. The specific land treatments used and recommended by the Service vary from one valley to the next, from farm to farm, and even from field to field. Before ever any work is done, each farm or ranch is analyzed both as a piece of land and as a business enterprise.

In making the physical analysis, field men of the Soil Conservation Service carefully note the lay of the land, the qualities of the soil, and the erosion hazards on every acre. As accurately as possible, they determine which lands can be cultivated under rotation practices without excessive soil loss, which lands need the protection afforded by special

crop arrangements or special tillage practices, and which ones require a permanent safeguarding cover of hay, trees, or grass.

The next step in soil conservation is to work out a new farm lay-out based on the survey information. Steep or unproductive croplands, for example, may be earmarked for permanent cover of grass or trees; farm forests may be planned where grass is not paying out, or where it is failing to hold the soil; gullied areas may be turned into grass-covered waterways or small-scale sanctuaries for animals and birds. The end product is a new arrangement of fields, pastures, meadows, and woods that guards the soil and fits the land as nature made it.

In many cases, this new lay-out may not entirely fit the farmer's pocketbook. It may call for more hay crops than he actually needs and not enough cotton or corn; it may involve other changes that he simply cannot afford to make. If so, it is not a good lay-out in the final sense of the word, and it must be adjusted to family needs and market opportunities. Purely from the conservation standpoint, however, the lay-out based on physical land analysis is ideal. The closer the farmer can approach it and still make a living, the more stable and productive his land will be over the long run of years.

Drawing up a satisfactory land use lay-out is only half the job of planning for erosion control on the farm. Each parcel of land, even under the new use, generally needs some special practices or treatments

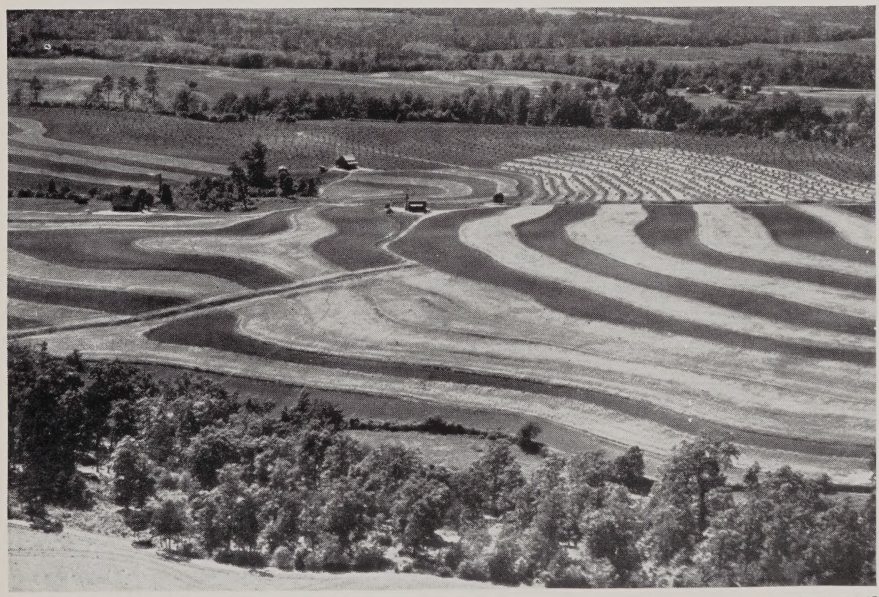

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FIGURE 2.—A complete farm plan for soil and water conservation fits the land as nature made it.

for adequate soil protection. Croplands are nearly always farmed in rotation, usually on the level, and sometimes in strips; terraces are frequently built for added protection. Pastures are limed, fertilized, and grazed with caution to improve the growth of soil-guarding grass. Woodlands are fenced to keep out livestock, protected from fire, and managed according to scientific principles of forestry. These are only a few of the dozens of erosion-control practices that may be called into play. The new lay-out *plus* the practices make up a complete farm plan for soil and water conservation (fig. 2). Under such a plan, soil conservation is not just an incidental farming activity; it becomes part and parcel of the whole business of making a living from the land.

In range areas, soil conservation takes a somewhat different form. Less emphasis is placed on basic shifts in land use; the stress is on protection and improvement of grass through careful management of cattle, sheep, or goats. But at bottom, the conservation plan on a western ranch is like that on an eastern farm. It is a combination of good land use and appropriate land management, based on the inherent needs and adaptabilities of every single acre.

If the Soil Conservation Service were a commercial concern instead of a Government agency, these conservation plans for farm or range might be called its principal stock in trade. The Service trains men specifically to help develop such plans—to determine land problems and coordinate conservation solutions—and it puts these men at the service of the Nation's farmers and ranchers. In the interest of economy and efficiency, the work is concentrated in areas where the land clearly needs treatment and where the farmers show a high degree of interest in soil and water conservation.

Erosion-Control Cooperatives

Most Soil Conservation Service activity is centered in local soil conservation districts organized by farmers under State law. These districts, generally similar in legal status to drainage districts and irrigation districts, are a comparatively new development on the American agricultural scene: The first one was organized in the late summer of 1937. Today they are either already organized or taking form in more than three-fourths of the States—across perhaps 300 million acres of farm and range land. The policy of the Soil Conservation Service is to help these districts to the fullest possible extent in reaching their objectives. Upon request, the Service assigns conservation technicians to work with farmers of the districts in developing farm conservation plans; and, wherever necessary and available, it also provides C. C. C. labor, equipment, and planting material for putting the plans into effect.

Radiation Centers of Conservation Farming

The oldest phase of the Soil Conservation Service program is a Nation-wide network of erosion-control demonstration projects. At present, there are 178 of these projects in 45 States, Hawaii, and Puerto Rico; and erosion-control demonstrations are also going forward under Soil Conservation Service supervision in the vicinity of more than 300 C. C. C. camps. Technical assistance, labor, equipment, and materials are made available in the project and camp areas to farmers who agree to adopt a complete conservation program and maintain it for at least 5 years. Each demonstration area, covering about 25,000 acres on the average, represents farming conditions over a rather broad surrounding territory; each serves as a cross-section model or "show window" of conservation farming. Although most of the demonstrations are still in operation, few new ones are planned for the future. From now on, emphasis will be on assistance to farmer-organized soil conservation districts.

New Uses for Worn-Out Acres

In the United States there are millions of acres now in cultivation that should be in grass or trees. In addition to a large area of good land, which for one reason or another is unsuitable for cultivation, there are millions of naturally "weak" acres—steep hillsides, badly eroded areas, and infertile lands. Ordinarily, these lands make up only a small portion of any one farm, and the farmer himself can usually turn them to forest or pasture without sacrificing income. In many parts of the country, however, whole farms or large parts of farms are completely unfit for cultivation. Within the present framework of private ownership, no conservation plan can be developed for them that will hold the soil and produce a satisfactory living.

Part of the Soil Conservation Service's job is to buy lands of this kind, take them out of cultivation, and build them up as pasture, range, forest, or wildlife refuge (fig. 3). Like the erosion-control demonstrations, this work is going forward within carefully selected project areas scattered over the country. One aim is to give hard-pressed men on poor lands a chance to make a fresh start elsewhere. Another, and equally important, aim is to use the purchased lands in developing a more satisfactory pattern of land use for each project area as a whole.

Grassland projects are located chiefly in the Great Plains and the western range country, where many people need more extended tracts of land for successful farm or ranching operations. Tracts purchased by the Service in this region are developed for livestock grazing and leased to farmers or ranchers in the vicinity. This gives men on cramped hold-

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FIGURE 3.—The Service buys lands that are unfit for cropping and puts them to some better use.

ings—men who have virtually been compelled to overgraze or overtill the land—room to adopt more conservative methods of management. Ranchers are able to distribute their flocks or herds over a broader area and to ease up the pressure on the grass. Farmers are able to shift from hazardous cash-grain farming to a better balanced type of agriculture—an agriculture which combines grain production with livestock grazing.

Scattered settler projects are situated in regions like the so-called cut-over country of the Great Lakes States, where farms are often poor and widely separated. By purchasing these isolated farms and building them up as forests or wildlife sanctuaries, the Soil Conservation Service aims to put the land to a more socially beneficial use and to lower the costs of local government at the same time. Once the scattered settlers move out, roads formerly maintained at considerable expense to all taxpayers for the benefit of a few families can be closed, schools can be consolidated, and many other economies can be effected without sacrifice of essential public services.

Pasture and timber projects are located mainly in the eastern and southeastern parts of the country. In these project areas, purchased lands are built up ordinarily as community forests or pastures and leased to the farmers who remain. The work produces definite benefits for both land and people. Worn-out and badly eroded croplands are protected by fresh grass against further washing. Farmers operating close to the margin on hopelessly small tracts are given a chance to branch out and supplement their incomes by sale of timber products or by the development of stock raising or dairying.

More Water for Western Farms and Ranches

Over much of the West where rains are few and far between the chances of making a living on the land and of holding the soil intact depend very largely on the amount of water readily available for crops and herds. Lacking an adequate water supply to support livestock production, many farmers in the Great Plains and farther west, especially during the past 20 years, have put all their land in wheat and hoped for satisfactory rain. When the rains failed to come, crops were wiped out and the land was left without protection against the high Plains winds.

In range areas also, inadequate water supplies have contributed to widespread damage of the land. Where stock ponds are widely scattered, grazing herds and flocks tend to bunch up around the few available water holes and eat the grass to death. As a result, many western range areas have been directly exposed to the onslaught of rain and wind; and many western ranchers have found it increasingly difficult to keep a "tight hide" on their herds.

Under the Department of Agriculture's water-facilities program, the Soil Conservation Service, in cooperation with the Farm Security Administration and the Bureau of Agricultural Economics, is helping farmers and ranchers to correct these conditions in designated areas of the 17 westernmost States. The program includes construction or repair of dams, dugouts, and stock ponds (fig. 4) to hoard rainfall on the ground surface; drilling of wells, improvement of springs, and installation of pumps to recover underground water supplies. The facilities, generally planned by Service technicians and paid for by the farmer, are used on farms mainly for small-scale irrigation—making it possible for the farmer to develop hayfields and home gardens instead of relying entirely on a risky crop of grain. On range lands, the newly developed water supplies help to bring about a better distribution of grazing. In all water-facilities areas, the Service also extends assistance to farmers and ranchers in developing and establishing complete soil and water conservation plans.

Forestry on the Farm

Trees are one of nature's most efficient weapons of soil defense. Conservation farmers use them to tie down steep hillsides, to check the growth of big gullies, to stabilize unsteady stream banks, and to screen off cultivated fields from harmful winds. At the same time, trees also help to keep money in the family pocketbook. They provide fuel for the kitchen range, posts for field-division fences, lumber for repairing barns and sheds, and sawlogs for sale at nearby markets. But the value of trees both for erosion control and income production depends largely on the kind of treatment they receive. A scrubby and neglected stand is not much good for any purpose; and far too many of the country's farm woods are scrubby and neglected.

To show farmers how woodlands can be managed for maximum returns and to encourage a wider use of trees on the farm, the Soil Conservation Service is cooperating with State agencies in conducting a number of farm forestry demonstration projects. Farmers taking part in the program receive help from trained foresters in building up their woods and in working out long-time programs of sound forestry management. The work includes reforestation of sparsely covered areas, thinning where the growth is too dense, protection against fire and grazing, and the development of rather definite timber cutting schedules to insure constant vigorous stands. Soil Conservation Service technicians also help these farmers to work out conservation plans for the other parts of their farms—for their cultivated fields, meadows, and pastures.

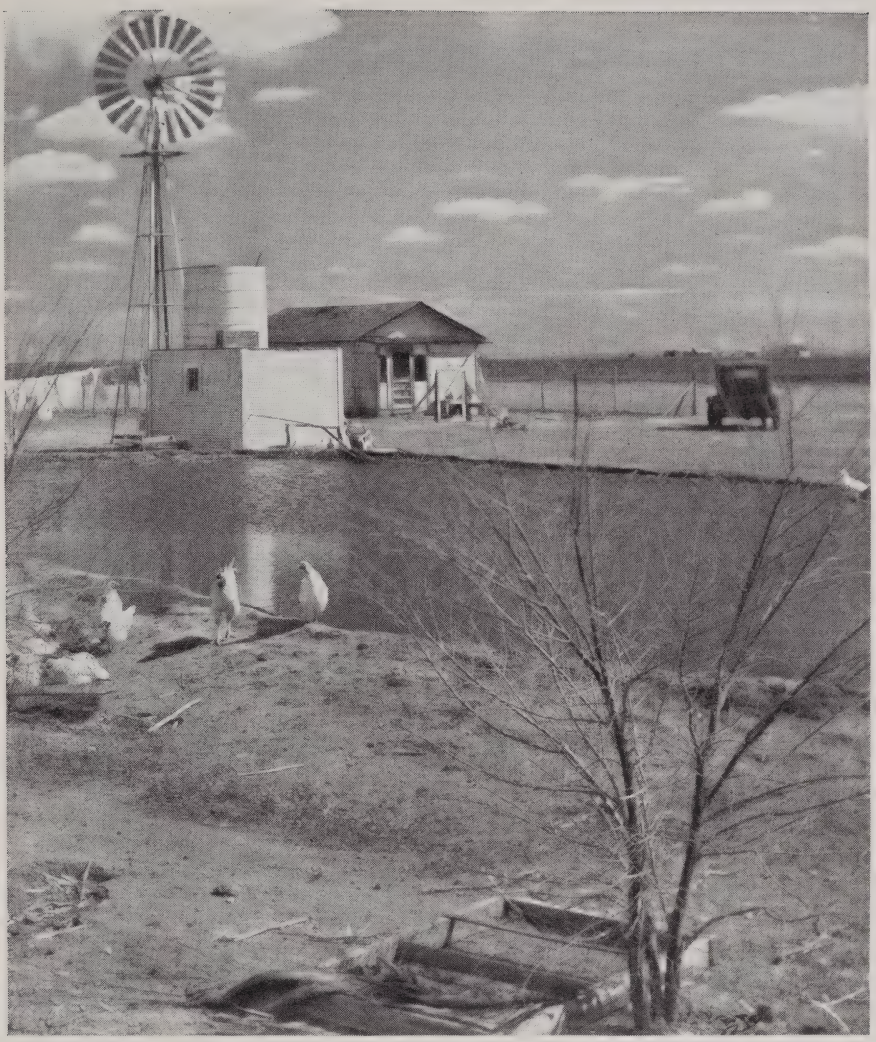

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FIGURE 4.—In farm and range areas of the West, the Service helps to develop small water facilities.

To Keep Highways Clear

Erosion is not strictly a farm-land problem. Soil washed out of fields and pastures is frequently spread out over nearby roads or dumped into highway ditches to impede efficient drainage. In some cases, fast-moving rain water directly attacks cuts and fills, undermines culverts and banks. Every year the taxpayers of the Nation pay over

$100,000,000 to repair the damages of erosion along the country's 3 million miles of roads and highways.

Working with State and county highway departments and the Public Roads Administration, the Soil Conservation Service is developing and testing practical measures for controlling erosion along roadsides and for protecting adjacent lands from highway run-off. As on farm fields, a combination of plants and structures is generally used, with emphasis on the plants. After treatment has been established and put to the test along a short stretch of roadway, highway officials of the locality are able to plan a practical program over all roadsides under their care that need soil protection.

Land Inventories for River Regulation

Since much of the water that causes floods along the country's large and small streams comes from farms and ranches and since floods seem to be growing progressively worse, Congress in 1936 directed the Department of Agriculture to carry forward a program of flood control on the land. In this effort, the Soil Conservation Service is joined with the Forest Service and the Bureau of Agricultural Economics. Together the three agencies are at work in a large number of drainage basins, investigating all land conditions that contribute to flood hazards and recommending practical land treatment that will aid in checking floods at the source. Since the general technique of this so-called upstream flood control is to hold more of the rainfall on the land, the work gears in closely with erosion-control operations and with the whole attempt to provide better farm and range water supplies.

Farm Drainage and the C. C. C.

Although the Soil Conservation Service is mainly concerned with "slowing down the raindrop in its journey to the sea," in some areas its job is almost exactly the reverse. Keeping flat bottom lands free of surplus water is often just as essential for good land use as putting steep hillsides in trees or grass. In a number of States, C. C. C. enrollees are working under Soil Conservation Service supervision in farmer-organized public-drainage districts. The enrollees help the districts by cleaning out ditches, repairing underground tile drains, and performing various jobs to take the rainfall efficiently off the land.

Land and Water Problems Under the Microscope

To keep all this work on the land dynamic—to bring about constant improvement and refinement—the Soil Conservation Service also con-

ducts a comprehensive program of land-and-water research. Both everyday and long-range problems connected with soil and water conservation, flood control, farm drainage, and irrigation are being minutely studied at more than 100 field stations throughout the country (fig. 5). The work includes investigation into the rates and processes of erosion, the influence of land use and conservation practices on streamflow, the behavior of rainstorms and their tie-up with erosion, the connection be-

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FIGURE 5.—Scientific studies bring about constant improvements in the Soil Conservation Service program.

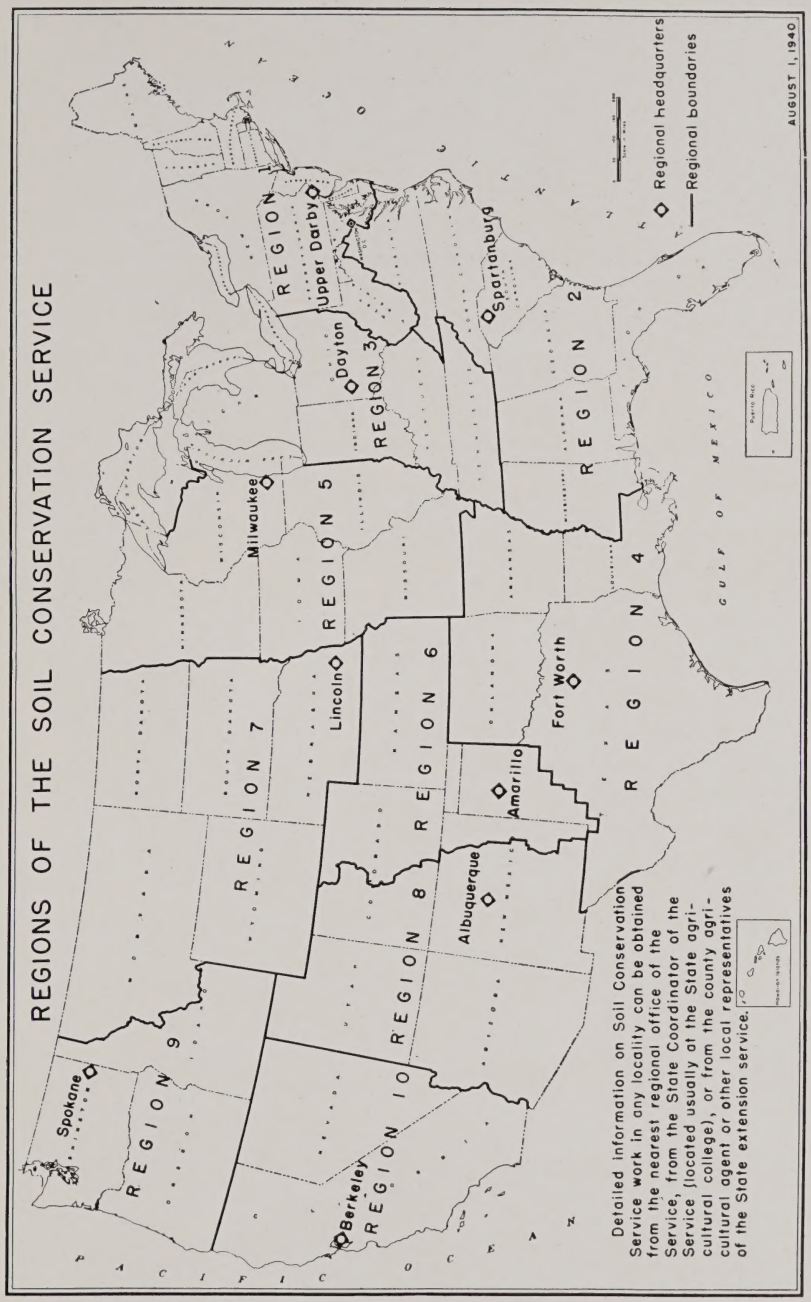
tween farming practice and silting of stream channels or reservoirs, the control of moving sand dunes, the dollars-and-cents aspects of conservation farming, the relation between mountain snow packs and irrigation water supplies in the West, the history of erosion in the United States and foreign lands, and many other questions. Significant findings are used to implement the Service's operations program and are made available to other Government agencies and to the public generally.

Charting the Soil Wealth of a Nation

Out of the immense variety of land spread across the United States, only a comparatively small portion is really suited for growing crops. Some can be farmed with safety and profit if properly handled; other areas are too rough, too steep, too rocky, too dry, or too infertile for cultivation. To get the maximum benefit from our land, we must know all the pertinent facts about the inherent capabilities of every acre. We

must know not merely the kind of soil and what crops it will produce but how it reacts to rain and wind, how the land slopes, how much erosion has already occurred, and how much is likely to occur under various kinds of use.

In order to help plan farms for erosion control and water conservation, the Soil Conservation Service gathers this kind of information in all its areas of work. The Service records basic land facts on simple five-color maps, which tell the farmer almost at a glance where he can most effectively and safely concentrate crop production and where he might better use the land for grazing, timber production, or some other purpose. As rapidly as possible, the Service is extending these fact-finding surveys outside its work areas to all the major farming sections of the Nation. The ultimate goal is a comprehensive inventory of the country's soil potentialities—an inventory that will aid farmers and farmer groups, as well as local, State, and Federal agencies, in charting a safe and intelligent course for American agriculture.



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